

REMARKS

Claims 28, 32, 33 and 34 have been amended. Claims 2-9, 11-15, 17-26 and 28-34 remain pending in the application. Reconsideration is respectfully requested in light of the following remarks.

Provisional Double Patenting Rejection:

The Examiner provisionally rejected claims 2-9, 11-15, 17-26 and 28-34 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-36 of copending Application No. 10/027,353. Applicant acknowledges the provisional double patenting rejection and will address it should it become non-provisional.

Section 102(b) Rejection:

The Examiner rejected claims 4-6, 9, 11-15, 17, 20, 23-26 and 28-34 under 35 U.S.C. § 102(b) as being anticipated by Crater et al. (U.S. Patent 5,146,588) (hereinafter, "Crater"). Although Applicant traverses this rejection, Applicant submits that the rejection is moot in view of the amendments to claims 28, 32, 33 and 34. Applicant further submits that the pending claims are not anticipated by Crater for at least the following reasons.

With respect to claim 32, Crater fails to teach or suggest a system comprising a storage array including a plurality of mass storage devices; an array controller configured to perform block operations on data stored to the storage array, wherein the array controller includes a memory configured to provide an addressable block operand storage space and to store within the block operand storage space block operands received from one or more of said plurality of mass storage devices; and a cache accumulator memory comprising a plurality of block storage locations and a functional unit configured to perform a block operation on one or more block operands to generate a block result;

wherein the plurality of block storage locations are configured to cache a portion of the block operand storage space of the memory; wherein in response to an instruction using an address in the memory to identify a first block operand, the cache accumulator memory is configured to output the first block operand from the plurality of block storage locations to the functional unit; and wherein the plurality of block storage locations are further configured to accumulate an intermediate result of a block accumulation operation performed on the first block operand, wherein the intermediate result is both a result of and an operand of the block accumulation operation, such that during the block accumulation operation, the plurality of block storage locations are concurrently configured both to cache certain ones of the block operands and to accumulate the intermediate result of the block accumulation operation.

In rejecting claim 32, the Examiner asserts that Crater's cache memory 113 as a whole is configured to cache data between a mass memory system 103 and a number of host processors 11, 12, and further that cache memory 113 includes cache memory elements 340-355 and a redundancy accumulator 301. However, Applicants note that significant structural and functional differences exist between amended claim 32 and Crater. Specifically, amended claim 32 requires that the block storage locations of a cache accumulator be configured to cache a portion of a block operand storage space of a memory and to accumulate intermediate results of an accumulation operand, such that during the accumulation operation, the same set of block storage locations is concurrently configured both to cache certain block operands and to accumulate an intermediate result of an accumulation operation.

Crater clearly teaches the implementation of caching and accumulation functions within separate, non-overlapping structural elements within cache memory 113. That is, as shown in FIG. 4 and described in detail at col. 8, line 56 – col. 10, line 9, storage of intermediate accumulation results is performed within redundancy accumulator 301. Redundancy accumulator 301 is not a cache of any memory. As shown in FIG. 3 and described at col. 7, lines 6-21, Crater specifically provides cache memories 340-355 for

the caching of block operands en route to or from storage array 103 and processors 11, 12.

Crater's use of separate structures to implement the functions of accumulation and caching is completely the opposite of the requirements of Applicants' claim 32, which requires that the same set of block storage locations perform both caching and accumulation. Crater makes no suggestion whatsoever that these functions could be combined or that such a combination would in any way be desirable. Thus, Crater cannot be said to anticipate claim 1, nor is claim 1 rendered obvious in view of Crater alone or in combination with the other cited references.

A similar argument applies to independent claims 28, 33 and 34, each of which has been amended to recite limitations similar to amended claim 32. Applicant therefore submits that independent claims 28, 32, 33 and 34 are distinguishable over the cited references. Applicant further notes that numerous ones of the dependent claims recite additional distinctions over the cited references. However, as the independent claims have been shown to be distinguishable, further discussion of the dependent claims is unnecessary at this time.

Section 103(a) Rejections:

The Examiner rejected claims 2 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Crater in view of McClure (U.S. Patent 5,590,307), claims 2 and 19 as being unpatentable over Crater in view of Faraboschi et al. (U.S. Patent 6,122,708), and claims 7, 8, 21 and 22 as being unpatentable over Crater in view of Handy ("The Cache Memory Book: The Authoritative Reference on Cache Design"). Although Applicant traverses these rejections, Applicant submits that they are moot in view of the amendments to the independent claims. Applicant further submits that each of the dependent claims is distinguishable for at least the reasons given above with respect to the independent claims.

CONCLUSION

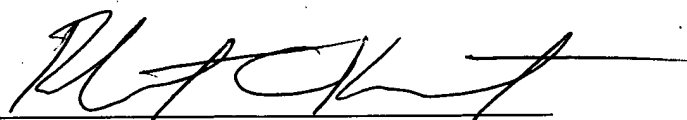
Applicant submits the application is in condition for allowance, and prompt notice to that effect is respectfully requested.

If any extension of time (under 37 C.F.R. § 1.136) is necessary to prevent the above-referenced application from becoming abandoned, Applicant hereby petitions for such an extension. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5681-05200/RCK.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☐ Petition for Extension of Time
- ☐ Notice of Change of Address
- ☐ Other:

Respectfully submitted,



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